

METHOD OF WASHING UTENSILS

Cross Reference to Related Applications

This is a divisional of co-pending U.S. Application Serial No. 09/947,485, to Cantrell et al., which is incorporated herein by reference in its entirety.

Field of the Invention

The present invention relates to a utensil basket for use with a pot and pan washing machine. The present invention is a powered utensil basket, in that it captures a jet stream to maintain a washing action within the basket.

Background of the Invention

Pot and pan washing machines, of the type used in restaurants, institutions and other eating facilities often involve a large wash tank or basin in which water is circulated about the pots and pans to provide a washing action. One such machine is described in U.S. Patent No. 4,773,436 issued to Cantrell et al., the specification of which is incorporated herein by reference. The machine of Cantrell includes a wash tank with jets located at an elevated position along the rear wall of the wash tank. The tank is filled with water to a level above the position of the jets. Pots and pans are placed in the wash tank, and a pump is activated to draw water from within the wash tank and direct it through the jets to create a jet stream. Each jet directs its jet stream toward the bottom wall of the wash tank, the bottom wall then deflects the jet stream upward and towards the front wall of the tank. The front wall then deflects the upward moving jet stream towards the rear wall of the tank, and the rear wall deflects the jet stream downward and back towards the front wall along the bottom wall. The combination of deflections of the jet stream from the bottom, front and rear walls provides a rolling washing action within the wash tank.

Although a machine that employs a wash tank and jet stream of the type described above is extremely useful for washing pots and pans, it is less desirable for washing smaller

1 items such as utensils. The wash tank is often of considerable depth making it difficult to
2 retrieve utensils that have been loosely sprawled across the bottom of the tank. Also, the
3 water within the wash tank is often left in the wash tank and reused for several loads,
4 increasing the difficulty of retrieving small items from the bottom of the wash tank.

5 An alternative to sprawling utensils loosely across the bottom of the wash tank, is to
6 contain the utensils within a utensil basket located within the wash tank. A utensil basket
7 maintains all of the small items within a single area for easy retrieval upon completion of the
8 washing cycle. Additionally, the utensil basket can be removable from the wash tank, further
9 increasing the ease of emptying the utensils from the tank.

10 Although the use of prior art utensil baskets does allow for easy collection and
11 removal of utensils from a wash-tank type washing machine, they do not efficiently utilize the
12 full washing action of the jet stream. Prior art utensil baskets often comprise a wire mesh
13 frame which can be mounted to or hung from a side of the wash tank. Being positioned along
14 a side of the wash tank, and having indiscriminate dimensions, these prior art baskets only
15 utilize a small portion of the washing action created by the jet stream thus decreasing the
16 effectiveness of the machine in fully cleaning the utensils placed within the basket. Therefore,
17 it is desirable to provide a utensil basket that more fully utilizes the washing action of the jet
18 stream in a wash-tank type washing machine.

19 **Summary of the Invention**

20 A principal object of the present invention is to provide an improved utensil basket for
21 use in a wash-tank type washing machine. Another object of the present invention is to
22 provide an improved utensil basket that utilizes a substantial portion of the washing action
23 within a wash-tank type washing machine. It is yet another object of the present invention to
24 provide an improved utensil basket that utilizes a substantial portion of the washing action

1 within a wash-tank type washing machine by substantially capturing a jet stream within the
2 utensil basket.

3 According to the above objects, the instant invention features an improved utensil
4 basket for placement within the wash tank of a pot and pan washing machine. The basket
5 comprises a bottom wall, a front wall, a rear wall, and two side walls. The walls are
6 dimensioned to capture the jet stream within the utensil basket and to fully utilize the rolling
7 washing action of the jet stream. The walls can be constructed of a substantially solid material
8 that provides for deflection and containment of the jet stream, or, alternatively, the walls can
9 be constructed of wire mesh and utilize the walls of the wash tank to provide for the deflection
10 of the jet stream.

11 Whether the walls of the utensil basket are solid or mesh, their dimensions should
12 correspond to the dimensions of the walls of the wash tank to fully utilize the same washing
13 action as that created by deflection of the jet stream within the wash tank. Nevertheless,
14 correspondence of wall dimensions is only important to the walls which are used to deflect the
15 jet stream and provide the rolling wash action. For example, the utensil basket of the
16 preferred embodiment is designed for the washing machine of U.S. Patent No. 4,773, 436.
17 This washing machine utilizes the bottom, front and rear walls of the wash tank to deflect the
18 jet stream and create the rolling action, it does not utilize the side walls of the tank for jet
19 stream deflection. Thus, the dimensions of the bottom, front and rear walls of the utensil
20 basket should correspond to dimensions of the bottom, front and rear walls of the wash tank,
21 while correspondence between the dimensions of the side walls of the utensil basket and those
22 of the wash tank are less important.

23 The utensil basket of the preferred embodiment utilizes walls that are substantially
24 solid, thus, the deflection of the jet stream is provided by the basket walls rather than by the
25 wash tank walls. The rear wall of the preferred embodiment includes an intake aperture for

1 receiving the jet stream traveling in a first direction from a jet located on the rear wall of the
2 wash tank. The bottom wall of the preferred embodiment includes a drain hole comprising
3 perforations. The perforations are large enough to allow water to drain out of the utensil
4 basket when the basket is removed from the wash tank, but small enough to allow a
5 substantial amount of the jet stream to be deflected by the bottom wall of the basket. The
6 substantially solid sidewalls of the preferred embodiment assist in containment of the jet
7 stream by minimizing the amount of peel-off from the jet stream, thus resulting in a highly
8 concentrated washing action within the utensil basket.

9 The jet stream enters the utensil basket at a predetermined angle and the jet stream is
10 then deflected by the bottom wall upward and toward the front wall of the basket and so forth,
11 in the same manner described above with respect to the deflection of the jet stream by the
12 walls of the wash tank. These deflections of the jet stream create a washing action captured
13 within the utensil basket which is virtually identical to the washing action within the wash
14 tank.

15 As the predetermined angle of the jet stream is based upon the dimensions of the wash
16 tank, the dimensions of the utensil basket should substantially correspond to the dimensions of
17 the deflecting walls of the wash tank. It may be desirable to reduce the dimensions of the
18 utensil basket, either for easier removal, or to intensify the wash action within the utensil
19 basket. If either the length (distance from the rear wall to the front wall) or height (depth) of
20 the basket is reduced from the dimensions of the wash tank, an appropriate reduction ratio
21 should be employed to ensure preservation of the washing action.

22 For example the angle each of the nozzles in Patent No. 4,773,436 is such that the jet
23 stream will hit the bottom wall of the wash tank at a location near the front wall of the wash
24 tank to allow the jet stream to deflect from the bottom wall, rise and circulate rearwardly from
25 the front wall. Reduction of the basket depth (height) will alter the point of impact of the jet

1 stream along the length of the basket, such that the distance from the rear wall to the point of
2 impact along the length of the bottom will be reduced in proportion to the reduction of the
3 depth. Thus simple geometry can be employed to determine the appropriate reduction ratio to
4 use to maintain substantially the same angles of deflection within the utensil basket as are
5 present within the wash tank.

6 The basket of the preferred embodiment captures the washing action created by a
7 single jet of the washing machine. The basket can be positioned to utilize either one of the
8 jets positioned along either side of the wash tank to maximize to amount of usable space
9 available within the tank for washing pots and pans. Additionally, the utensil basket can be
10 removably mounted within the wash tank to provide for ease of emptying and also to increase
11 space within the wash tank for pots and pans when utensils are not being washed.

12 The foregoing and other objects are intended to be illustrative of the invention and are
13 not meant in a limiting sense. Many possible embodiments of the invention may be made and
14 will be readily evident upon a study of the following specification and accompanying
15 drawings comprising a part thereof. Various features and subcombinations of invention may
16 be employed without reference to other features and subcombinations. Other objects and
17 advantages of this invention will become apparent from the following description taken in
18 connection with the accompanying drawings, wherein is set forth by way of illustration and
19 example, an embodiment of this invention.

Description of the Drawings

Preferred embodiments of the invention, illustrative of the best modes in which the applicant has contemplated applying the principles, are set forth in the following description and are shown in the drawings and are particularly and distinctly pointed out and set forth in the appended claims.

Figure 1 is a perspective view from the rear side of the inventive utensil basket.

Figure 2 is a partial cutaway perspective side view of the inventive utensil basket mounted within a wash tank.

1 **Description of the Preferred Embodiment**

2 Preferred embodiments of the present invention are hereinafter described with
3 reference to the accompanying drawings.

4 Referring to Fig. 1, a preferred embodiment of the inventive utensil basket for use in a
5 wash-tank type washing machine is shown. Utensil basket **10** can be constructed of any
6 suitable material such as stainless steel, or, for a lighter weight basket, a plastic material may
7 be used. The preferred embodiment of utensil basket **10** includes an open top design having a
8 base and four perimeter walls extending vertically from the base.

9 Base or bottom wall **30** is generally rectangular in shape and can be constructed as a
10 single piece or as multiple segments joined together. Rear wall **20** extends vertically from a
11 first end located along the perimeter of bottom wall **30**. Front wall **40** extends vertically from
12 a second end of the perimeter of bottom wall **30** opposite rear wall **20**. Opposing side walls
13 **50** and **55** extend vertically along opposing sides of the perimeter of bottom wall **30**. Side
14 walls **50** and **55** connect rear wall **20** to front wall **40**.

15 Bottom wall **30** of the preferred embodiment is substantially solid, but includes a drain
16 hole to permit water drainage out of basket **10**. It is desirable to allow the water to easily
17 drain from basket **10** when the basket is removed from the wash tank, or when the water in the
18 wash tank is emptied. As is shown in Fig. 1, the drain hole of the preferred embodiment
19 consists of a series of holes or perforations through bottom wall **30**. Perforations **35** are of
20 appropriate size and location to permit adequate drainage of basket **10** while simultaneously
21 allowing bottom wall **30** to deflect a substantial portion of the jet stream and capture the
22 rolling wash action of the washing machine within basket **10**.

23 Rear wall **20** extends vertically in a direction substantially perpendicular to base **30**.
24 As is shown in Fig. 2, the lower portion of rear wall **20** is slightly angled to conform to the
25 contour of the rear wall of the wash tank for which the basket has been designed. The upper

1 portion of rear wall 20 includes inlet aperture 25. Mounting flange 70 extends horizontally in
2 a substantially perpendicular direction from rear wall 20. Slit 75 extends vertically through
3 mounting flange 70 in a direction substantially perpendicular to flange 70.

4 Front wall 40 is solid and extends vertically in a direction substantially perpendicular
5 to base 30 to conform to the contour of the front wall of the wash tank for which basket 10 has
6 been designed. Opposing side walls 50 and 55 are solid and extend vertically in a direction
7 substantially perpendicular to base 30. Horizontal cross-member 60 extends between front
8 wall 40 and rear wall 20. Horizontal cross-members 65 extend between side walls 50 and 55.
9 Cross-members 60 and 65 divide basket 10 into multiple compartments to allow for support
10 and separation of utensils placed within the basket. The cross-members are constructed to
11 have a substantially small cross-section to prevent deflection of the jet stream by the cross-
12 members. The cross-members can be permanently connected to the walls of basket 10, or
13 they can be made removable and adjustable to allow for manipulation of compartment sizes
14 and shapes.

15 Figure 2 shows utensil basket 10 mounted within wash tank 80, shown partially cut-
16 away. Side wall 55 of utensil basket 10 has been partially cut-away in Fig. 2 to show the
17 directions of jet stream 100 and wash action 110 within basket 10.

18 The top portion of the rear wall of wash tank 80 includes horizontally extending
19 groove 90 for receiving mounting flange 70 of basket 10. Vertical rib 95 extends
20 perpendicular to flange 70 for engagement with slit 75. Basket 10 is releasably mounted
21 within the wash tank through the use of mount 70, groove 90, rib 95, and slit 75. Basket 10 is
22 placed within tank 80, mounting flange 70 rests on horizontal groove 90, and rib 95 extends
23 through slit 75 to prevent movement of the basket along horizontal groove 90. Rear wall 20
24 of basket 10 is contoured to the shape of the rear wall of tank 80 such that rear wall 20 fits
25 snugly against the rear wall of the wash tank to support the weight of basket 10. In the

1 preferred embodiment, the lower portion of rear wall **20** of utensil basket **10** is slightly angled
2 to conform to the contour of intake grate **107** located along the lower portion of rear wall **20**.
3 Intake grate **107** is the subject of U.S. Patent Application Serial No. 09/947,484 filed on
4 September 6, 2001, the specification of which is incorporated herein by reference.

5 In operation, tank **80** is filled with water and a cleaning agent. Operating water level
6 **120** is preferably above the top of nozzle **105**. When basket **10** is correctly mounted within
7 wash tank **80**, intake aperture **25** will correspond to nozzle **105**. Water is drawn from wash
8 tank **80** through intake grate **107** by a pump. The pump then expels the water through nozzle
9 **105** to create jet stream **100**. Nozzle **105** is angled to direct jet stream **100** through inlet
10 aperture **25**, into basket **10**, and toward the front portion of bottom wall **30**. Bottom wall **30**
11 then deflects jet stream **100** upward and towards front wall **40**. Front wall **40** then deflects the
12 upward moving jet stream towards rear wall **20** of the basket, and the rear wall deflects the jet
13 stream downward and back towards the front wall along bottom wall **30**. The combination of
14 deflections of the jet stream from the bottom, front and rear walls provides a rolling, washing
15 action **110** within utensil basket **10**, this wash action is essentially identical to the wash action
16 described with respect to the washing machine of U.S. Patent No. 4,773,436.

17 Length **L** of basket **10** corresponds to the length between the front and rear walls of the
18 wash tank, and height **H** of the front and rear walls of the basket corresponds to the height of
19 the wash tank. Width **W** is governed by the size of nozzle **105** and by the amount of wash
20 action that is desired to be captured within basket **10**. Width **W** of the basket can be increased
21 to encompass multiple nozzles within the wash tank if increased wash action is desired.

22 It may be desirable to reduce the overall size of the utensil basket for several reasons.
23 First of all, using the same dimensions as the wash tank may be too cumbersome for a
24 removable basket, and also take up more space within the tank than necessary to wash

1 utensils. Additionally, reduction of the dimensions of basket **10** will result in increasing the
2 intensity of the jet stream as it travels through the basket along the path of wash action **110**.

3 Length **L** and height **H** of basket **10** do not have to be identical to the length and height
4 of wash tank **80**; however, it is preferred that the dimensions correspond to each other to
5 ensure that the wash action within basket **10** is virtually identical to the wash action of the
6 washing machine. For example, note that utensil basket **10** does not rest on the bottom wall of
7 wash tank **80**, making submersion height **H'** of the portion of basket **10** below water level **120**
8 less than the height of the portion of the wash tank below water level **120**. Therefore, in the
9 preferred embodiment, length **L** of the utensil basket will be proportionally reduced using a
10 reduction ratio to maintain the same angles of deflection of jet stream **100** within utensil
11 basket **10** as are present in the wash tank.

12 The reduction ratio is determined by simple geometry based upon the angle of impact
13 of jet stream **100** with bottom wall **30**. The reduction ratio can be a direct proportion,
14 whereby as submersion height **H'** is reduced by a given percentage, length **L** will be reduced
15 by the same percentage. Alternatively, the reduction ratio may be more complex, taking into
16 account the effects of the increased intensity of the impact of jet stream **100** with the walls of
17 basket **10**. For example, as submersion height **H'** is reduced, the point of impact of jet stream
18 **100** with bottom wall **30** will become increasing closer to nozzle **105**. The closer the point of
19 impact to the nozzle, the greater the amount of energy, or higher the intensity, of jet stream
20 **100**. This increased intensity may result in undesirable splashing or overflow of the jet stream
21 from the utensil basket due to the angles of deflection. Thus, it may be desirable to adjust
22 some of the deflection angles within basket **10** while still maintaining the rolling effect of
23 wash action **110**.

24 The height of sidewalls **50** and **55** is not as important to the proper deflection of the jet
25 stream within the utensil basket of the preferred embodiment as the other dimensions

1 discussed above. Nevertheless, it is preferred that the height of the sidewalls be such that
2 water level 120 will be above the top of side walls 50 and 55. This will allow water to peel
3 over the top of side walls 50 and 55 as water is forced into basket 10 by nozzle 105 thereby
4 maintaining an equal water level throughout the wash tank and the utensil basket.

5 As the jet stream moves through the water that is already present in the utensil basket,
6 portions of the jet stream will tend to peel off into the surround fluid, reducing the
7 effectiveness of the wash action. The use of solid sidewalls assists in containment of the jet
8 stream. Width **W** of the utensil basket can be varied to provide the desired amount of
9 restriction of the jet stream within basket 10. Reducing width **W** will function to guide the jet
10 stream along a more confined path, significantly decreasing the peeling off of the jet stream
11 into the surrounding fluid.

12 In the foregoing description, certain terms have been used for brevity, clearness and
13 understanding, but no unnecessary limitations are to be implied therefrom beyond the
14 requirements of the prior art, because such terms are used for descriptive purposes and are
15 intended to be broadly construed. Moreover, the description and illustration of the inventions
16 is by way of example, and the scope of the invention is not limited to the exact details shown
17 or described.

18 Certain changes may be made in embodying the above invention and in the
19 construction thereof, without departing from the spirit and scope of the invention. It is
20 intended that all matter contained in the above description and shown in the accompanying
21 drawings shall be interpreted as illustrative and not meant in a limiting sense.

22 Although the powered utensil basket of the instant invention has been described and
23 shown in association with a pot and pan washing machine having jets located along the rear
24 wall of the wash tank, the scope of invention is not intended to be so limited. The jets of the
25 wash tank could be located along any single wall, or along multiple walls. In such instances

1 the dimensions of the utensil basket would be reconfigured to appropriately capture the wash
2 action created by the jet stream. Additionally, the jet stream of the instant invention may be
3 deflected in a manner other than that described herein. The walls from which the jet stream
4 may be deflected is not absolutely decisive of the invention, so long as the essence of
5 capturing a wash action within the utensil basket is maintained.

6 The inlet aperture can be located within any wall of the utensil basket, or even through
7 the open top, to correspond to the location of the jet nozzles within the wash tank. A top wall
8 can also be included on the utensil basket, if desired.

9 While the preferred embodiment shows the use of a mount to attach the utensil basket
10 to the wash tank, the basket may be merely placed with the wash tank without the use of any
11 mount, so long as appropriate dimensions are utilized to capture the jet stream. Additionally,
12 alternative mounts may be developed to appropriately attach the basket to the wash tank.

13 Having now described the features, discoveries and principles of the invention, the
14 manner in which the inventive utensil basket is constructed and used, the characteristics of the
15 construction, and advantageous, new and useful results obtained, the new and useful
16 structures, devices, elements, arrangements, parts and combinations, are set forth in the
17 appended claims.

18 It is also to be understood that the following claims are intended to cover all of the
19 generic and specific features of the invention herein described, and all statements of the scope
20 of the invention which, as a matter of language, might be said to fall therebetween.